

Claim Listing This listing of claims will replace all prior versions and listings of claims in the application:

1. (currently amended) A mutant castor Δ^9 -18:0-ACP desaturase with an ~~substantial~~ increase of at least three-fold in activity towards fatty acid substrates with chains containing fewer than 18 carbon atoms having ~~two~~ one or more amino acid substitutions selected from the group consisting of:
 - a) Ala or Thr for Met at residue 114 of SEQ ID NO: 1;
 - b) Arg for Thr at residue 117 of SEQ ID NO: 1;
 - c) Gly or Ala for Leu at residue 118 of SEQ ID NO: 1;
 - d) Val or Leu for Pro at residue 179 of SEQ ID NO: 1;
 - e) Val or Ser for Thr at residue 181 of SEQ ID NO: 1;
 - and
 - f) Leu for Gly at residue 188 of SEQ ID NO: 1.
2. (previously cancelled)
3. (previously amended) The mutant castor Δ^9 -18:0-ACP desaturase of Claim 1 having the amino acid substitutions Arg for Thr at residue 117 of SEQ ID NO: 1 and Leu for Gly at residue 188 of SEQ ID NO: 1.

4. (currently amended) The mutant castor Δ^9 -18:0-ACP desaturase of Claim ~~3~~ 1 having each of the following ~~additional~~ amino acid substitutions:
- a) Ala for Met at residue 114 of SEQ ID NO: 1;
 - b) Arg for Thr at residue 117 of SEQ ID NO: 1;
 - ~~b~~c) Gly for Leu at residue 118 of SEQ ID NO: 1;
 - ~~e~~d) Val for Pro at residue 179 of SEQ ID NO: 1; ~~and~~
 - ~~d~~e) Val for Thr at residue 181 of SEQ ID NO: 1; and
 - f) Leu for Gly at residue 188 of SEQ ID NO: 1.
5. (currently amended) The mutant castor Δ^9 -18:0-ACP desaturase of Claim ~~3~~ 1 having each of the following ~~additional~~ amino acid substitutions:
- a) Thr for Met at residue 114 of SEQ ID NO: 1;
 - b) Arg for Thr at residue 117 of SEQ ID NO: 1;
 - ~~b~~c) Ala for Leu at residue 118 of SEQ ID NO: 1;
 - ~~e~~d) Leu for Pro at residue 179 of SEQ ID NO: 1; ~~and~~
 - ~~d~~e) Ser for Thr at residue 181 of SEQ ID NO: 1; and
 - f) Leu for Gly at residue 188 of SEQ ID NO: 1.

Claims 6-59 (cancelled).

60. (previously added) The mutant castor Δ^9 -18:0-ACP desaturase of Claim 1 having the amino acid substitutions Arg for Thr at residue 117 of SEQ ID NO: 1 and Leu for Pro at residue 179 of SEQ ID NO: 1.
61. (new) A mutant castor Δ^9 -18:0-ACP desaturase selected from the group consisting of:
- i) a desaturase having each of the following substitutions: Ala for Met at residue 114, Arg for Thr at residue 117, Gly for Leu at residue 118, Val for Pro at residue 179, Val for Thr at residue 181 and Leu for Gly at residue 188, all of SEQ ID NO: 1;
 - ii) a desaturase having each of the following substitutions: Thr for Met at residue 117, Arg for Thr at residue 117, Ala for Leu at residue 118, Leu for Pro at residue 179, Ser for Thr at residue 181 and Leu for Gly at residue 188, all of SEQ ID NO: 1; and
 - iii) a desaturase having the following substitutions: Arg for Thr at residue 117 and Leu for Gly at residue 188, both of SEQ ID NO: 1.